

Pre-storage leukoreduction of red cells at cold and room temperature: comparison of efficacy and clinical impact following transfusion

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**Aim and Objectives:** To achieve (1) Significant decrease in residual WBC count in leukoreduced bags filtered at cold temperature (2-6 degrees Celsius) in comparison to room temperature (20-24 degrees Celsius) as well as (2) Decrease in incidence of acute transfusion reaction (especially febrile non-haemolytic transfusion reaction; FNHTR) among patients transfused with leukoreduced bags processed at cold temperature in comparison to bags processed at room temperature

**Material and methods:** In first part of the study, blood bags collected from first 4 donors daily were processed for leukoreduction at room and cold temperature respectively (2 bags at each temperature). Residual WBC counts in bags processed at two temperatures were assessed using Nageotte haemocytometry and flow cytometry. In second part of the study (non-randomized clinical trial) leukoreduced bags were processed at either room or cold temperature for 6 months each and issued to patients. Post-transfusion monitoring was done for any episode of acute transfusion reaction especially FNHTR. The significance levels were set to  $p < 0.05$  for all the analysis. All the statistical analysis was performed using STATA/IC 13.2.

**Results and Conclusion:** The median WBC count among leukoreduced units filtered at room and cold temperature was  $0.1 \times 10^6$  and  $0.02 \times 10^6$  WBCs/unit respectively and difference is statistically significant. Leukoreduction at cold temperature is significantly superior to room temperature and there is no difference in RBC recovery at either temperature. The rate of FNHTR among transfused patients is less with leukoreduced bags filtered at cold temperature in comparison to room temperature. However further sampling will be needed to confirm this finding.

Keywords: Leukoreduction, FNHTR, Filtration